

# **KING COUNTY CONVEYANCE SYSTEM IMPROVEMENT PROJECT**

## ***TASK 140 – PRIORITIZATION OF SUBREGIONAL PLANNING AREAS***

**JUNE 1999**



## INTRODUCTION

King County Department of Natural Resources, Wastewater Treatment Division (WTD) is conducting the Conveyance System Improvement (CSI) Project, that involves planning, project specification and constraint identification efforts for an array of conveyance and pump station improvements. The process for planning these improvements is divided into three phases:

- Phase 1 – Overall Planning,
- Phase 2 – Subregional Planning Area Specific Planning, and
- Phase 3 – Specific Project Planning and Final Report

Task 140 is included within Phase 1 to use the criteria developed in Task 120 (see *Task 120 – Draft Criteria for Prioritization of Subregional Planning Areas and Projects*) for selection and prioritization of specific subregional planning areas, also referred to as service basins, and projects for study. This report summarizes the process to use the criteria in the priority-setting process. The purpose of the prioritization process was to effectively focus King County’s resources to address critical capacity issues and conveyance system problems.

A “Core Team” of senior King County WTD and consultant staff was established to work together to coordinate and facilitate the CSI project. Members of the Core Team used the selected criteria developed during Task 120 to select priority-planning areas.

## SUBREGIONAL PLANNING AREAS

Table 1 describes the locations of the eight subregional planning areas that were identified in Task 120 and prioritized in this Task 140.

Evaluation of other “Early Out” planning areas is already underway. Because of already-identified priority problems, these Early Out areas were given immediate priority in the CSI project. These areas are the following:

- North Puget Sound area around Richmond Beach and Hidden Lake (including the Hidden Lake PS and the Boeing Creek Trunk)
- The Central and South Green River areas from the Pierce County Line to Kent and Garrison Creek.

**Table 1 – Subregional Planning Area Locations**

<b>Subregional Planning Areas</b>	<b>Locations</b>
North Lake Washington	Areas north and east of the Kenmore Interceptor in King and Snohomish County
NW Lake Washington	The Matthews Park drainage basin in the area of the N. and W. Lake City Trunks
NE Lake Washington	Northeast area of Lake Washington from Juanita to Medina
North Lake Sammamish	Redmond and north end of Lake Sammamish
South Lake Sammamish	South end of Lake Sammamish from Sammamish Plateau on the east side of the lake to Issaquah and to Lake Hills on the west side of the lake.
SE Lake Washington	Hazelwood and Coal Creek areas of Southeast Lake Washington
South Lake Washington	The Madsen Creek area of the Cedar River basin
Green River “North”	Tukwila and Renton south to ULID 1

## **PLANNING AREA PRIORITIZATION METHODOLOGY**

Measurable characteristics were described for each criterion. Importance factors from 1 to 4 were assigned based upon the relative importance of criteria voted on by workshop participants and subsequent Core Team discussions. The highest importance was factors (4 and 3) were assigned to problems associated with system capacity and overflows. Operations and customer claims received a factor of 2. All others received 1's.

A comparative ranking (“rank”) of 1 to 3 were assigned to each criterion depending upon how each planning area compares with other areas. For example, if three areas were compared for length of pipe at capacity and the Area 1 had 5,000 feet, Area 2 had 4,000 feet, and Area 3 had 2,000 feet of pipe at capacity, the ranks would be 3 for Area 1, 2 for Area 2, and 1 for Area 3. Eight basins were compared and prioritized. Therefore, generally two or three areas each received a rank of 1(low), 2 (moderate), or 3 (high).

The score for each criterion for each subregional planning area were calculated by multiplying its relative rank (1 to 3) times its importance factor (1 to 4). Therefore, the score for each criterion for any one planning area can vary from 1 to 12 – Calculated as 1 x 1 for low rank and importance to 3 x 4 for high rank and importance. The total relative score for each planning area is the sum of the individual criterion scores for the area.

The methodology is reflected in the subregional planning area prioritization worksheets that were used to characterize and compare planning areas. Completed subregional planning area prioritization worksheets are included in the appendix.

## **PROJECT PRIORITIZATION**

Several projects had already been identified as “Early Out” projects and were underway as the prioritization of the other areas took place. Therefore, it has been determined that for other than additional clearly defined “Early Out” projects, additional project prioritization will not be completed until after subregional planning areas have been prioritized through this Task 140 process.

## **DATA COLLECTION**

Priority setting information was collected from King County databases, project listings, and through interviews with County staff. Two interviews were conducted – one each with supervisory and operational staffs for the West and East Sections on December 15 and 22, 1998 respectively. The notes for the West and East Section meetings are included in the Appendix.

### **Database information**

King County hydraulic models and databases were queried to determine the following criteria for each subregional planning area:

- Year at capacity and lengths of pipe to be paralleled or replaced
- Year that pump stations were at and the size of the pump station
- Number of overflows
- Number of customer claims
- Number of projected new customers

Additionally, capital improvement and maintenance project databases and interviews with King County supervisory and operational staff were used to quantify the following parameters:

- Number of operations and maintenance projects and problems
- Number of known significant County projects
- Number of known local coordination issues

Some of this information was quantified and tabulated on a GIS map of the planning area (Figure 1). This map also illustrates the general locations of the eight subregional planning areas that were prioritized. Table 1 lists the eight areas and describes their general locations.

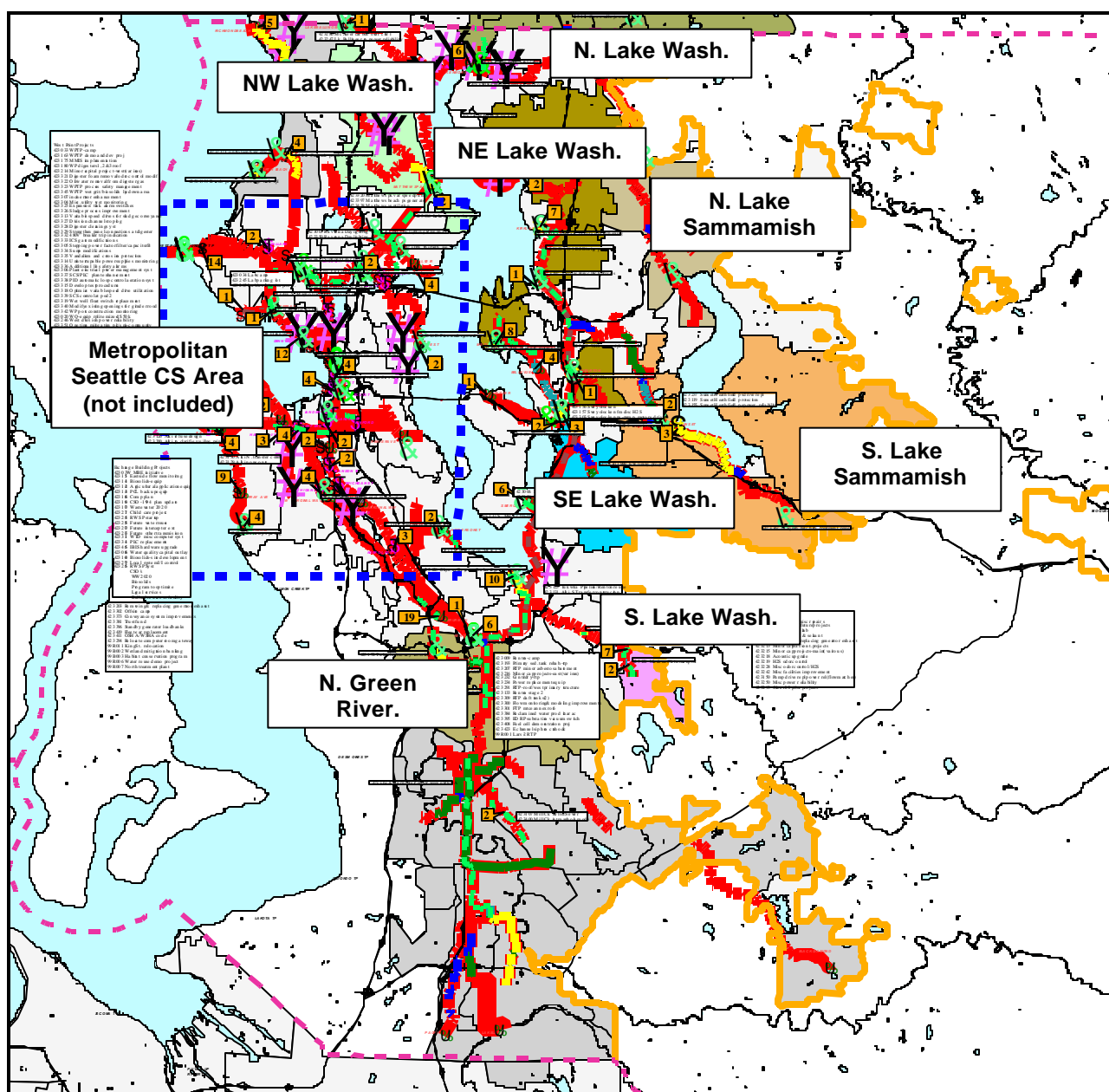


Figure 1 – Planning Area Prioritization Information

## SERVICE AREA PRIORITIZATION RESULTS

The prioritization criteria were applied to the selected subregional planning areas listed in Table 1. A summary of results, ranking scores for each criteria and total ranking score of each of the planning areas are shown in Table 2. The relative rank of each of the basins is shown on the bottom line of the table.

**Table 2 –Subregional Planning Area Prioritization Comparison  
Summary Worksheet**

Criteria	Importance	North Lake Washington		NW Lake Washington		NE Lake Washington		North Lake Sammamish		South Lake Sammamish		SE Lake Washington		South Lake Washington		North Green River	
		Score	Rank*	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank
Flows exceed capacity	4	0	0	0	0	873	1	0	0	4840	2	1386	1	1118	1	5472	3
PS with problems	3	0	0	0	0	2.6	3	0	0	0	0	0	0	0	0	0	0
Known overflows	3	8	2	3	1	24	3	0	0	5	2	2	1	9	2	0	0
Customer claims	2	4	3	4	3	1	2	0	0	0	0	0	0	0	0	0	0
<b>Operation and Maint.</b>																	
Operations and maint.	2	1	1	1	1	3	3	0	1	2	2	1	1	1	1	1	1
King County projects	1	1	1	2	2	5	3	0	0	1	1	0	0	1	1	3	2
Local coord. issues	1	2	2	1	1	1	1	2	2	2	2	2	2	0	0	0	0
<b>Growth</b>																	
20 year population growth	1	78200	3	9930	1	14340	2	17240	2	12800	2	5900	1	1377	1	12740	2
Total Ranking Score**			20		15		38		6		27		12		14		16
Planning Area Priority		<b>3</b>		<b>5</b>		<b>1</b>		<b>8</b>		<b>2</b>		<b>7</b>		<b>6</b>		<b>4</b>	

\*Rank is the relative comparison of values between basins: High (upper third) = 3, Moderate (middle third) = 2, Low (lower third) = 1, No score = 0.

\*\*Total ranking score =  $\Sigma$  (Importance X Rank).

Planning Area Priority is the relative highest to lowest order of the Total Ranking Scores

A summary listing of the resulting priority and primary findings is shown in Table 3.

**Table 3 – Subregional Planning Area Priority Listing**

<b>Planning Area Priority</b>	<b>Ranking Score</b>	<b>Planning Area</b>	<b>Key Findings</b>
1	38	NE Lake Washington	Approximately 12,000 feet of pipe at capacity within 17 years, two major pump station projects, high number of known overflows, significant pump station O&M issues, moderate growth
2	27	South Lake Sammamish	More than 20,000 feet of pipe at capacity within 20 years, recorded overflows, O&M issues related to two pump stations, high growth area
3	20	North Lake Washington	High number of overflows and some customer claims, Kenmore Section 5. Highest growth, local coordination issues
4	16	North Green River	Approximately 5,000 feet of pipe nearing capacity, three County projects, moderate growth
5	15	NW Lake Washington	Three known overflows, some customer claims, one O&M problem, County projects at Matthews Park and Lake Ballinger PS, Edmonds flow transfer
6	14	South Lake Washington	Small amount of pipe at capacity, high number of overflows, one County project, low growth
7	12	SE Lake Washington	Approximately 5,000 feet at capacity within 12 years, 2 recorded overflows, one O&M problem, moderate growth
8	6	North Lake Sammamish	No significant problems identified, area of high growth

It can be seen from the table that based upon the criteria, importance factors and ranking that the Northeast Lake Washington planning area is a clear high priority area. South Lake Sammamish is second followed by North Lake Washington. Then four planning areas are about equal in ranking – North Green River, NW Lake Washington, South Lake Washington, and SE Lake Washington. Using these criteria and ranking system, North Lake Sammamish has the apparent lowest priority.

## **APPENDIX**

The following appendix includes West and East Section meeting notes, and individual planning area worksheets.

## **APPENDIX**

1. Meeting Notes King County CSI Project – West Section Service Area – Issues and Problems
2. Meeting Notes King County CSI Project – East Section Service Area – Issues and Problems
3. Conveyance System Improvements Project – Prioritization Worksheets (eight sheets)
  - North Lake Washington
  - Northwest Lake Washington
  - Northeast Lake Washington
  - North Lake Sammamish
  - South Lake Sammamish
  - Southeast Lake Washington
  - South Lake Washington
  - North Green River



## **MEETING NOTES KING COUNTY CSI PROJECT**

### **WEST SECTION SERVICE AREA – ISSUES AND PROBLEMS**

**Prepared by:** Jennifer Kauffman, EnviroIssues

**Date:** 12/15/98 **Time:** 7:45 am **Location:** Exchange Building, Seattle

**Attendees:** Jim Peterson (HDR); Mike O’Neal (Herrera); Jennifer Kauffman (EnviroIssues); Bob Peterson, Katherine McKee, Ed Cox and Mike Fischer (King County)

### **I. SUMMARY OF DISCUSSION - PLANNING ISSUES**

The meeting was structured to review problems and issues in the planning areas in the West Section of the King County wastewater service area. The following planning/integration issues were identified for CSI program consideration:

1. While a separate program is addressing CSOs, the CSI program must address appropriate upstream conveyance issues that contribute to the CSOs.
2. The CSI project team must recognize that Bob Swarner’s group is constantly refining flow projections and identify a process for ensuring the most recent projections are considered in the planning process. Population and employment data are similarly being improved for integration into this effort.
3. Flow management issues must be identified and considered. For example, the York P. S. (P.S.) mostly pumps to the East Section service area. In the summer, it pumps to the West Section. Planning for the new North Treatment Plant, and associated impacts on the CSI program, must be addressed.

Issues and problems in each of the planning areas in the West Section are summarized below

### **II. ISSUES/PROBLEMS IN THE NW LAKE WASHINGTON BASIN**

Ed Cox noted that an excellent source of information would be the Northwest Lake Washington predesign report, prepared in 1963 by Brown and Caldwell. The document is missing. It relates to Thornton Creek, the Kenmore Lake line, and the ongoing lawsuit. Specific issues and problems in this basin are summarized below.

#### **A. McAleer Trunk**

- Flow transfer with Edmonds

- The Ballinger P.S. hooks up to the McAleer Trunk. The Ballinger P.S. now directs flow over the hill to Edmonds.
- The County has a flow swap agreement with Edmonds. The County is not prepared to handle these flows if they are returned to the County before North Creek is completed. Edmonds takes most of the flow in winter. During the summer, wastewater is pumped in both directions.
- This is a storm-impacted facility. No real overflows have occurred yet, but the King County system is pushed hydraulically and the local system nearly overflowed in 1997. When Lake Ballinger P. S. is pumping to McAleer Trunk, McAleer has no reserve capacity.
- Possible flow transfer with Hidden Lake Service area needs to be considered.
- The flow from the Ballinger P.S. to the McAleer Trunk has increased over time. The assumption is that all flows will go to the County in the future, either on a temporary or permanent basis. This issue is RWSP-dependent, but needs an interim response.
- Upstream of the Ballinger P.S., during storm events the lake flows into the local sewer. Also, there is reported high I&I upstream of the McAleer line.
- Information sources:
  - Get flow information from Rob to determine frequency and duration of full flow events.
  - Get flow monitoring information from the City of Edmonds. They gather this information as a basis for billing their component agencies. Also get copy of the MOA with Edmonds relating to flow swaps.
  - Get logbook (from Fischer) that contains records of backups into the wet well at the Lake Ballinger P. S..

## **B. Kenmore Interceptor - Section 5**

- Section 5 has a hydraulic restriction downstream of W11-50 (crossing of NE 68<sup>th</sup>). The 78" pipe was offset during construction and paved, leaving 3 feet of clearance and causing a hydraulic restriction.
- While this line is not on the storm-impacted list, the issue will not be addressed by the North Creek project.
- In 1998 a drop in flow in this area has been observed for unknown reasons. It may be due to changes made by the City of Seattle to address their problems at Sheridan Beach.

- Peak flow does not match the model (flow is higher – CHECK WITH BOB SWARNER).
- Kenmore P.S. capacity is limited by downstream flow restrictions. This P.S. will be subject to expansion in the RWSP, in conjunction with the North End Treatment Plant (in the Executive's Preferred Plan).

### **C. Thornton Creek Trunk**

- The N. Lake City and W. Lake City area have experienced hydraulic jumps and local complaints about bubbling toilets and odors.
- The local system backs up into houses and overflows at King County manholes (possible relationship to problem at Meadowbrook detention pond – high inflow problem).
- Sinkhole formed east of Thornton Creek, indicating local inflow problems in this area.
- Local sewers at Matthews Park P.S. have backed up.
- N. Lake City line at 23<sup>rd</sup> Ave. NE and NE 127 – local system backups cause flooding of 6 houses, as well as odor problems. There are an increasing number of complaints. Also, the area at NE 110<sup>th</sup> and 35<sup>th</sup>, in the vicinity of the Meadowbrook pond, is a problem area.
- Actions:
  - Get flow reports from Rob (Thornton Creek).
  - Check overflow reports that address known overflows from the County system. Also check DOE reports.

## **III. ISSUES/PROBLEMS IN THE CITY OF SEATTLE SERVICE AREA**

### **A. Green Lake Trunk**

- Backups and surcharges are suspected at Haller Lake, but there are not known overflows. Hydraulics need to be checked.
- This area received King County Council funds for local sewer analysis in recent years.
- Green Lake Trunk, north of the lake, backs up. The entire area north of 85<sup>th</sup> is separated. There are no known problems downstream of the Lake.
- Action: get flow records from Rob.

**B. Laurelhurst Trunk**

- This is a CSO facility. The Belvoir P.S. is partially separated. The local system backs up upstream from the P.S., although there are no overflows. High wet well levels have been reported this year.

**C. Montlake Regulator**

- This is a CSO project but with local sewer backups. Frequent local overflows have been reported this year above the Montlake Regulator. Flooding of homes by the Yacht Club, on the south side of Portage Bay, has been noted.
- Arboretum Trunk has flooding problems not related to the King County system.
- The City's Harrison St. project involved separation of sanitary and storm sewers, but a storm drain was reconnected. Backups upstream of LU2-10 are causing problems for the City.
- King County has received and denied about 15 claims in the last 5 years for backups in the local system.
- Action: get flow monitoring information from Rob.

**D. Delridge Trunk (west Duwamish Basin)**

- Three City CSO facilities are located upstream (Longfellow Creek CSOs). The County has received claims for sewer backups into homes (three locations). County has denied these claims. Hydraulic deficiencies in the local sewer system have been noted.

**E. Duwamish P.S.**

- This facility cannot easily handle W. Seattle flow transfers. It just started backing up into P.S. The County is manually controlling the gate.
- Due to a hydraulic restriction by added flow from Alki, the Duwamish P. S. can now only use two pumps.
- There are surcharges above the Duwamish P.S.
- Problems are related to the flow swap with Henderson. Michigan and Brandon overflows have been reduced.

#### **F. Upstream of 8<sup>th</sup> Avenue Regulator**

- Backups into local system upstream of the 8<sup>th</sup> Street regulator have occurred. Thirteen or fourteen houses have been flooded. No health problems have been noted or claims accepted.
- The area is low and can barely handle normal flows. It cannot be used for storage.
- Action: obtain upstream flow monitoring from Rob; ask him to add a monitoring station downstream.

#### **G. Interbay P.S.**

- Ed reports that there are capacity problems at this P.S.

#### **H. Other Service Areas**

- Southwest Lake Washington, North Interceptor, Ballard, Central Trunk – no problems noted.

### **IV. ISSUES/PROBLEMS IN THE NORTH PUGET SOUND SERVICE AREA**

#### **A. Carkeek**

- Near the upper end of Piper's Creek, local sewers backup in houses and businesses on the south side of Holman Road.
- The City has reported full manholes (MH T 25D, MH T 25B).
- The Carkeek North Beach P.S. overflows. Sanitary sewers have backed up, although not recently (since the upgrade). No public health issues are noted.
- Gunnars has an I/I project in this area.
- In Broadview, City is "resolving" flooding issues that cause problems at Carkeek.

## **V. ISSUES/PROBLEMS IN THE NORTH LAKE WASHINGTON SERVICE AREA**

### **A. Swamp Cr., North Cr., and Lower Bear Cr.**

- This is an RWSP-dependent area. The County may take over regional facilities from Cross Valley Water and Sewer District, and Alderwood Sewer District. This will require a condition assessment to determine the cost/amount to pay to acquire the facilities.
- The acquisition is part of the Robinswood Agreement (King County Ordinance 98-920).
- The County needs to evaluate planning area, adequacy and future regional system implications.

## **MEETING NOTES KING COUNTY CSI PROJECT**

### **EAST SECTION SERVICE AREA – ISSUES AND PROBLEMS**

**Prepared by:** Jennifer Kauffman, EnviroIssues

**Date:** 12/22/98 **Time:** 9:00 am **Location:** East Section Water Reclamation Plant, Renton

**Attendees:** Jim Peterson (HDR); Mike O’Neal (Herrera); Jennifer Kauffman (EnviroIssues); Katherine McKee, Bill Burwell, Ed Cox and Ron Kohler (King County)

#### **I. SUMMARY OF DISCUSSION - PLANNING ISSUES**

The meeting was structured to review problems and issues in the planning areas in the East Section of the King County wastewater service area. It was noted that John Vaughn’s group maintains the Engineering Work Request (EWR) database, which lists priorities for engineering work within facilities. There are currently 297 priority 1 problems in the database. The EWR may be useful to the CSI project, once the planning area studies are underway. It was also noted that there are several flow meters in the East Section service area. Ron indicated that he has flow data from Brown and Caldwell, however he believes that only a few flow meters are reliable. This will require follow up.

The group noted that there is a need to develop criteria (a checklist) that the County should consider before taking over a local system (beyond the 1,000-acre/5,000 people measure). Condition of the system would be an example.

Issues and problems in each of the planning areas in the East Section service area are summarized below.

#### **II. ISSUES/PROBLEMS IN THE EAST LAKE WASHINGTON BASIN**

Hydraulic restrictions in this area include the Juanita Pump Station (P.S.), the Kirkland P.S., and the Swayolocken P.S./Bellevue Trunk.

##### **A. Juanita P. S.**

- The P.S. is undersized, although it can handle most flows.

- Influent sewer construction problems led to a paved invert that restricted the opening into the wet well (from 30" to 24").
- Four sewers come together upstream (sizes: 24", 18", 8" and 30"). The system is run at surcharge to fill the wet well. In Jan. 1990, the wet well overflowed to Champagne Pt.
- Distribution problems have been reported in the 24" and 18" forcemains.
- This P.S. is an early out project because it is a choke point, and it is difficult to get flows out of it. All four pumps in the P.S. run flat out during storms. The fourth pump runs during storms with a 12' surcharge. Two pumps and occasionally a third pump run under normal dry weather flows. The balancing valve to equalize forcemain pressure is not hooked up.
- All the pumps are variable speed Hydrotal pumps that used to have "ragging" problems. Sometimes they blew through the sides of the pump casings. The P.S. has flooded three times because of pump case failures.
- Dave Harrington had a difficult time tuning the P.S. controls because of hydraulic conditions. Water hammer could be a significant problem during power outages. The steel thrust blocks are warped.
- The area has experienced significant development, with higher density (vertical) housing replacing single family homes/zoning.
- According to Ed, the Northshore Utility District's 24" line, which feeds the P.S., may be experiencing hydraulic problems. The only sanitary sewer overflows associated with the Juanita P.S. have been due to power failures and a flooded dry well.
- Power outages or a generator failure at the Juanita P.S. may cause overflows in this area. The sewer is inspected monthly and there is no indication that it overflows at the present time.
- A priority is to plan a new P.S., with the capacity to handle future flows from the local system. The County cannot wait for the local government to make decisions on how to handle future growth.

## **B. Kirkland P.S.**

- This station has periodically experienced problems. The influent sewer is undersized, and overflows to Lake Washington are suspected. There is no storage capacity upstream, and not much freeboard.
- The local sanitary sewer overflows into the storm sewer. Upstream of the P.S., there is an overflow into the storm sewer and then into Lake Washington (near Central Way).

- High wet weather flows have been reported (I/I).
- Forcemain capacity is probably fine, but some old AC pipe needs to be replaced.
- There is a pumping station issue (size), and reported discrepancies between the dry/wet weather flows in the Kirkland area, possibly due to I/I.
- The City of Kirkland has upsized two local pump stations.

### **C. Yarrow Bay P.S.**

- There is current a project underway to upgrade the controls and drives. New alternate switching units and variable speed drives will be installed on two pumps, and a fixed drive on one pump. Two small units and one large unit are operated in a “fill and draw” mode.
- Minimal local odor complaints have been reported, but there is high solids buildup in the wet well.

### **D. Medina P.S.**

The P.S. experiences no routine problems. It experienced one problem in January 1997 related to transition pump problems. The evaluation should verify whether the root cause is debris, or pump problems. The need for existing force main air relief valves should be evaluated.

### **E. Factoria Trunk**

- The upper end is at capacity for peak/high storm flows.

### **F. Wilburton P.S.**

- This P.S. appears on the storm-impacted list. There is a hydraulic restriction upstream of the P. S. in the Factoria Trunk.

### **G. Swayolocken P.S. and Force Mains**

- An upgrading project is underway.

**H. Bellevue P.S.**

- Large debris and pump problems were noted. The flows versus design ratings do not match, which may be due to a change in the pump impeller. Pump design and capacity should be reviewed.

**I. Enatai Interceptor (from Mercer I.)**

- This interceptor is being slip-lined. It is operated at surcharge in accordance with its design. It should be OK once the grade is fixed at Swayolocken.

**J. Coal Creek**

- There are capacity problems on the upstream end, due to developers' additions to the County's system. The County needs to set the design alignment (not just accept the developers' piece-meal alignments). Hydraulic losses are evident.
- This area is a high priority because of new projects.

**K. South Mercer P.S. and Forcemain, and East Channel Siphon**

- South Mercer P.S. projects include generator setting and upgrade of an odor control facility.
- The forcemain may be under capacity. Previous work addressed corrosion problems, and anode protection is planned, which will help for 5-7 years.
- It is suggested that the CSI team take an independent cursory look at the anode protection system and capacity.
- The S. Mercer line has a series of repair bands and a history of community concerns.

**III. ISSUES AND PROBLEMS IN THE NORTH LAKE SAMMAMISH BASIN**

**A. Redmond/Upper Bear Creek Basin**

- This is a very complex system, which brings flows from the south to the north. No hydraulic problems have been experienced.

- The 24” City of Redmond sewer (Upper Bear Creek) has some local backups due to local capacity issues.
- The Blakely Ridge area is experiencing rapid development. The developer is designing a local sewer that may be turned over to the County eventually (even though the County does not want it because it’s too small to accommodate future growth). The City of Redmond serves this area.

## **B. Sammamish Plateau**

- Part of the central area of the Plateau that was flowing to the north will be rerouted to the south.

## **C. Northeast L. Sammamish**

- This area will continue to be routed north. A planned new pipe may be turned over to the County.
- The local sewer district has added HDPE pipe that may be turned over to the County.

## **D. Hollywood P.S. (outside planning area, north of Redmond)**

- This booster station is fine. It is a good backup that is still used for low flows in the summer. It includes a high-level bypass.
- A power failure could cause a backup in the system to downtown Redmond. They are in design to provide standby generator power at York P.S.
- The 42” interceptor downstream (north) of the Hollywood P.S. has capacity problems and can’t handle all three pumps.
- This is a flow transfer area: the County runs either the York (pumping to Renton) or Hollywood (pumping to West Point) P.S.
- Hollywood’s firm capacity (2 pumps operating) is 14.4 mgd.

## **E. North Creek Forcemain (ties to York P.S.)**

- This line is under construction. The County will take over the Lower Bear Creek sewer from the Cross Valley Sewer District.

## **IV. ISSUES AND PROBLEMS IN THE SOUTH LAKE SAMMAMISH BASIN**

### **A. Sunset and Heathfield P.S.**

- Both stations have two power supplies that alternately fail and cause half of the pumping capacity to be lost. The County is adding emergency generators at both locations.
- An overflow was reported but probably did not occur since the lake was 3' higher than normal. However, loss of power at Sunset caused a backup into the local system.
- Both P.S. are designed to provide space for larger pumps. There is limited forcemain capacity, and expansion of the P.S. would require expansion of the forcemain. There is ROW room for a parallel 24" forcemain.
- The Offsite Facilities Manual states that Sunset flows must be limited to 15 mgd. That problem was fixed so that limitation no longer applies.
- There is a project to replace the Westinghouse VFD.
- The existing 8" overflow line from Heathfield to Sunset may be undersized (one home and the street are flooded when there is a "hiccup" at Heathfield).
- The area between E. Lake Sammamish and Sammamish Plateau needs to be evaluated. Many homes are located in this area. The local system is likely to be turned over to the County eventually.
- The CSI project needs to coordinate with the two barreled siphon project through the L. Sammamish State Park (under the lake) that is currently in predesign. The County needs to be sure the current project to install emergency generators at Sunset and Heathfield P.S. can handle the increased flows from this area.

### **B. Issaquah Interceptor**

- This line is at capacity for 20-year storm flows.
- During wet weather conditions (less than 20-year storm), the interceptor still has capacity.
- Two interceptors are being built south of Issaquah. There is flooding in the local system near the fish hatchery and the Issaquah Mall. No known homes are involved.

- In the Sammamish Plateau, many septic systems are being converted. South of May Valley, septic systems are also being converted. This will increase the flow into the County's system.

### **C. Other Areas**

- The Lake Hills interceptor (the line north of Heathfield) is experiencing no problems. Neither is the Eastgate Interceptor, according to Rob's flow monitoring data.

## **V. ISSUES AND PROBLEMS IN THE SOUTH LAKE WASHINGTON BASIN**

### **A. Renton**

- Bryn Mawr is under construction, the Cascade Siphon has been replaced, and Stan Hummel is addressing Madsen Creek.

## **VI. ISSUES AND PROBLEMS IN THE GREEN RIVER NORTH BASIN**

### **A. South Interceptor**

- This line is being paralleled.

### **B. S. Renton Trunk**

- The service area is changing; may need to look at the capacity in the lower section.

## **VII. ISSUES AND PROBLEMS IN THE GREEN RIVER CENTRAL BASIN**

### **A. Garrison Creek**

- The hydraulic capacity is fine and no problems are being experienced. However, the line is partially exposed and is located in an unstable gravel streambed.

## **B. Other Issues**

- There is a need to check the status of Mill Creek, Des Moines, and Salmon Bay Treatment Plants to determine if they are planning to transfer flows east to relieve capacity issues.
- ULID/4 trunk/SeaTac growth. The City of SeaTac's system should be evaluated. Their treatment plant is at capacity, and they may decide to send flows to the County. Also, the airport may send industrial waste (glycol) to the County (an existing Brown and Caldwell project is looking at this issue).
- Mill Creek basin is an early out project.
- Covington just released its water rights permits, so rapid growth should be expected in that area.
- A future P.S. is likely to be needed to handle flows from Auburn.
- Replacement of the Auburn interceptor is being studied. It may be moved to the other side of 277<sup>th</sup>. The County is looking at taking over the Cascade Interceptor.

## **VIII. ISSUES AND PROBLEMS IN THE GREEN RIVER SOUTH BASIN**

### **A. M Street Trunk**

- No overflows reported in this area. It is being pushed hydraulically, and shows up on the list of storm-impacted facilities. The I/I report by Black and Veatch may contain pertinent information.

### **B. Pacific P.S.**

- The comprehensive plan recommends getting rid of the P.S. and extending the gravity line. The P.S. is at the end of its useful life, does not meet confined space standards, and has reliability issues. There is no overflow bypass, except the street, and no standby or backup power.
- There are no capacity issues.
- The Pacific/Algona sewers are very leaky and have high I/I. However, the overall quantity is small.

**C. Lakeland Hills P.S.**

- There is a current project to upgrade this P. S.. There is a need to look at high flows because the pumps reportedly run flat out. High I/I is suspected. There is H<sub>2</sub>S corrosion damage to the forcemain and wet well, reliability concerns no standby power or telemetry, and WSHA/OSHA access issues.
- There is an elementary school at low elevation that has been impacted twice by overflows.

**IX.WEST SECTION ISSUE**

- Need to be sure the Interbay P.S. capacity problem is added to the list of problems in the West Section.